



INTERVENTION OF MESIODENS FOLLOWED BY 2/4 APPLIANCE: A CASE REPORT

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ABSTRACT

Supernumerary tooth is taken into consideration to be one of the most common dental anomalies affecting the primary and early mixed dentition and can reason a whole lot of pathological disturbances to the growing permanent dentition and additionally ensuing in poor dental and facial aesthetics. Mesiodens are the erupted or unerupted tooth structure withinside the midline of maxilla, alongside normal teeth (between the central incisor). Early diagnosis and treatment are vital for prevention of deleterious results of mesiodens on dentoalveolar structure. So, we present a case report of 12 years old boy in the mixed dentition stage with mesiodens w.r.t 11, 21. The mesiodens was surgically extracted and 2/4 appliance was given for orthodontic correction.

Key words: Mesiodens, Supernumerary Tooth, 2/4 appliance.

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INTRODUCTION

A supernumerary tooth is a developmental anomaly characterized by a greater number of teeth than normal series [1-2]. The occurrence rate of supernumerary teeth ranges from 0.1% to 3.6%, with a 2:1 male to female preference. Mesiodens accounts for one-third of these cases. In contrast to 0.02%–1.9% for primary dentition, the occurrence rate for permanent dentition is 0.1%–3.6% [1-2]. This anomaly is of unknown etiology. Supernumerary teeth may occur as single rooted anomaly or in conjunction

with developmental Syndromes like cleft lip and palate, Downs syndromes, Cleidocranial Dysplasia, chorhinophalangeal syndrome and Gardner’s syndrome etc. [1-2]. Mesiodens, the most common supernumerary teeth accounts around 80% of all supernumerary teeth series which may erupt normally, inverted, stay impacted or take a horizontal position series [3]. The form can be tuberculate, conical, odontome, or carefully resemble the normal tooth, based on their morphology series [4].

Mesiodens can occur as a single or multiple called as Mesiodentes.

The aetiology of those teeth continues to be difficult to understand even though several theories had been counselled that it could be due to Genetics, Dichotomy of the enamel bud, Hyperactivity of the dental lamina, Aggregate of Genetic and environmental factors, Proliferation of odontogenic cell rests, Palatal off shoot from persisted interest of the dental lamina after the regular variety of enamel buds are formed, Atavism, Consanguineous marriages [3-9].

Mesiodens may give rise to a variety of complications such as Delayed eruption, Ectopic eruption of adjacent teeth, Midline diastema, Impaction, Malalignment of incisors, Displacement of axial rotation of neighbouring teeth, radicular resorption of neighbouring teeth, crowding, displacements, Potential growth of a dentigerous cyst, migration into the nasal sinuses or cavities [3, 4, 10].

Thus, this Case Report describes the intervention of mesiodens located in the middle of both upper central incisors along with diagnosis and treatment.

Case Report

History-

A 12 years-old boy reported to the Department of Pediatric and Preventive Dentistry complaining of malaligned teeth which was due to presence extra tooth in the upper front region of the jaw. Medical and past dental history was noncontributory. He was a patient in good health who had no known syndrome affiliation. He had no familial history of the same.

On oral examination, the patient was in the mixed dentition period and along with that, there was one conical supernumerary tooth present in the anterior region of the maxilla in the middle of the two central incisors. As a result, compared to 11, 21's distal rotation was labially positioned. [Fig-1] [Fig-2].

IOPAR was taken to evaluate the status and growth of the supernumerary tooth and also to rule out the existence of any other impacted supernumerary teeth in that region. The radiograph revealed that conical supernumerary tooth with completely developed roots

present in the middle of two maxillary permanent central incisors [Fig-3].

Diagnosis- Angle's class 1 malocclusion with Supernumerary tooth in b/w 2 Central Incisor.

Treatment Plan-

It was planned to extract the supernumerary tooth under local anesthesia then followed by 2x4 appliance in maxillary arch to correct the rotated Right Central Incisor.

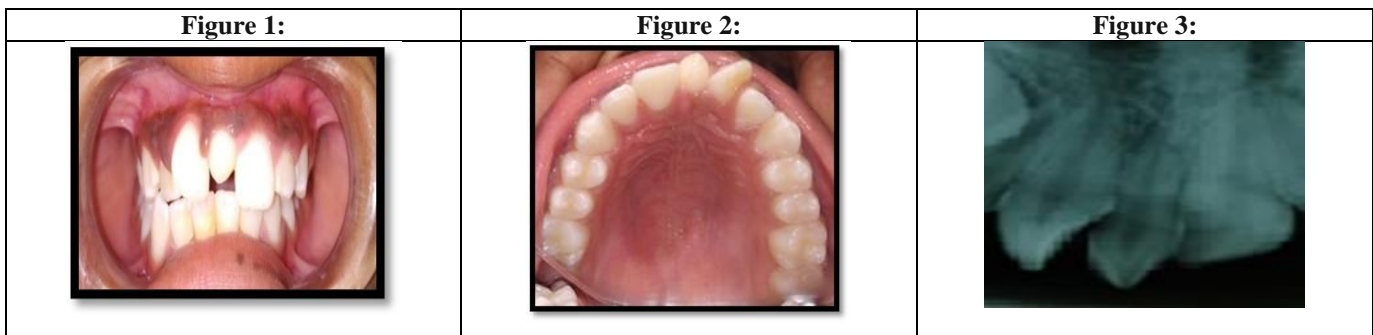
Treatment Done-

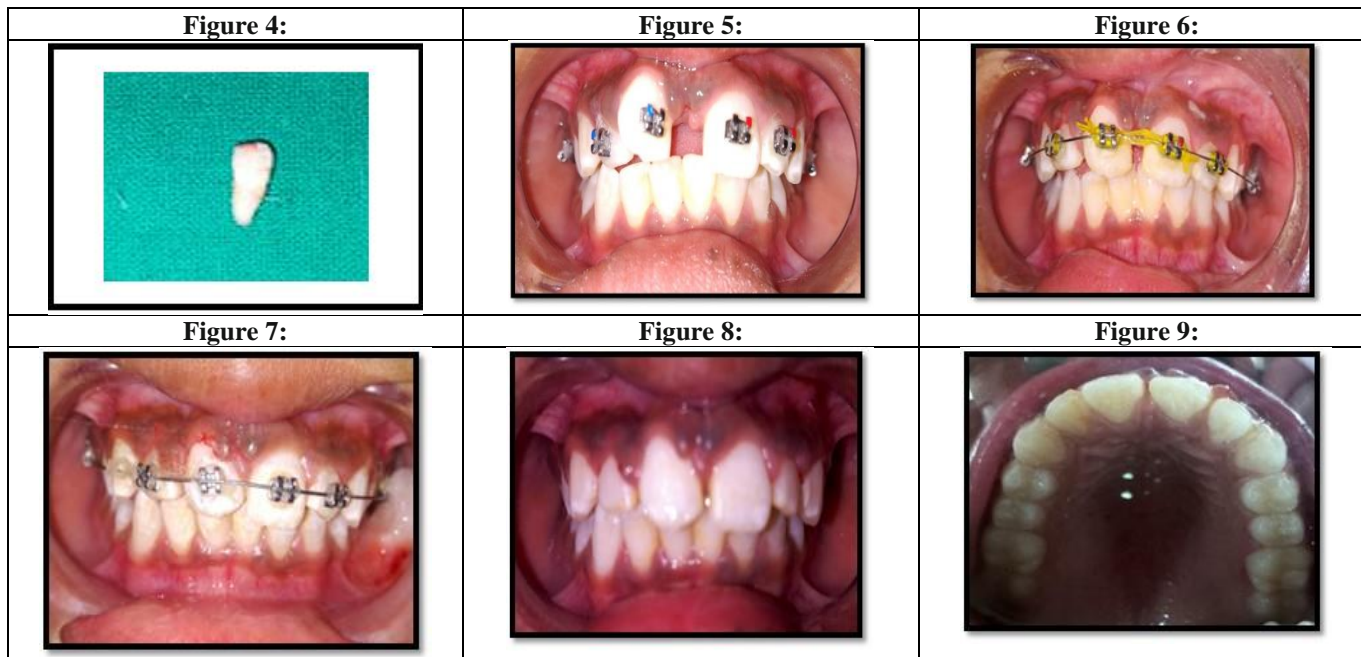
Extraction of Supernumerary tooth:

Extraction of supernumerary tooth was done under L.A. Local anaesthetic, 3.6 cc 2% lidocaine with 1/100,000 epinephrine, was administered slowly via labial infiltration with a 30-gauge needle. After anaesthesia was accomplished, surgical extraction of mesiodens was done followed by suturing of extraction site [Fig-4]. Post extraction, the patient was recalled after 1 week.

Management by 2 x 4 appliance:

We planned for 2x4 appliance in maxillary arch for correction of rotated Right Central Incisor. Space analysis using the Moyer's mixed dentition analysis showed the availability of adequate space within the arch for realignment of teeth. After discussing the treatment modalities with parents, we selected a short-span wire-fixed orthodontic treatment with 4 pre adjusted edgewise brackets with a 0.022" slot. The brackets were bonded on the labial aspects of the four maxillary permanent incisors [Fig-5]. A short-span nickel-titanium 0.012 (Ni-Ti) round arch wire was cut equally on both sides of the center line and placed into the molar tubes. The wire was stabilized in its position using O-ring for 2 months. For correction of spacing, we applied E-chain on all brackets of Incisors [Fig-6]. After 2 months of follow-up, each 0.014 (Ni-Ti) and 0.016 (Ni-Ti) wire were placed for further 2 months respectively [Fig-7]. At 6 months review, all the four incisors had been aligned in proper places and also spacing was closed in between 2 Central Incisors. Then 0.016 wire was removed and brackets were de-bonded. The patient was kept on follow-up for further 6 months [Fig-8] [Fig-9].





DISCUSSION

Mesiodens is a frequent type of supernumerary tooth that appears in the maxillary midline. However, very little literature is available on double supernumerary teeth or mesiodentes, as they do not occur frequently. Single mesiodens is seen in 78.1% of the cases and multiple mesiodentes in 21.9% of the cases [3]. Most of the mesiodentes (55.2%) had been determined to be in vertical position (55.2%) accompanied via way of means of inverted position (37.6%) and horizontal position (7%) [8]. Most of the mesiodens continue to be unerupted, and in the event that they are erupting, it will likely be an ectopic eruption [3, 8]. The majority of mesiodens are discovered between the ages of 7 and 9, when maxillary permanent central incisors erupt. Presence of mesiodens is mainly found during the radiological examination of nonerupted or axial rotated of upper central incisors or diastema [3]. Treatment of impacted mesiodens facilities on numerous factors which encompass the age of the child, clinical manifestation, capacity of the child to tolerate the surgical procedure, root development level of the adjoining permanent tooth etc.

Yague-Garcia et al. (2009) and Munns et al. (1981) advise early mesiodens extraction to avoid issues down the road [15-16]. If the mesiodens are asymptomatic then they're left in region and extraction is delayed till the adjacent tooth root completion [4, 12].

Mesiodens are always under keen observational follow up. Their extraction is continually discouraged because of the worry of iatrogenic harm to the permanent tooth [9, 13]. Henry et al (1989), Humerfelt et al (1985) and Solares et al (1990) suggest that in order to avoid the

risk of iatrogenic injury to the developing permanent teeth, surgical intervention must be postponed until the late mixed dentition period [17,18]. As long as the coronal part of the follicle of the supernumerary tooth stays intact, migration of the supernumerary tooth is feasible which may also motive any disturbance in eruption or alignment of permanent dentition directs the extraction in the course of mixed dentition [8, 9, 14].

Similar case study published by Asha et al. (2015) had a 10-year-old child with mesiodente between the two maxillary central incisors, which was extracted after orthodontic intervention planning. The extraction was done due to aesthetic concerns [19]. However, in this present case, the mesiodens had already erupted into the oral cavity buccally and medially causing malocclusion. It has already caused midline diastema, malalignment, rotation of adjacent teeth structure. Due to these ongoing and future complications, the mesiodens was indicated for extraction followed by space maintainer. However, in this instance, timely completion of the extraction can prevent the eventual migration of the extra tooth and any associated difficulties.

On surgical removal of impacted supernumerary teeth in the maxillary anterior region, there are no much reports on complications or disturbances to adjacent teeth with incomplete root improvement in comparison to surgical treatment postponed for complete root improvement of incisors [2]. You can avoid future complications like delayed eruption of the permanent incisors or the need for additional surgery by taking early action and surgically extracting any unerupted supernumerary teeth as soon as they are found.

With this technique, the permanent incisor's capacity for spontaneous eruption is enhanced, helping to prevent midline shift, crowding, area loss, and eruption failure that could necessitate extensive orthodontic therapy. Therefore, an impacted supernumerary tooth has to be extracted as quickly as identified at a younger age while it seems to motive harm to adjacent teeth [2, 11]. Thus avoid the need for a second surgery. Moreover, it has been suggested that early exposure and bonding the unerupted incisor might also additionally bring about lack of assisting bone and create scar tissue, which might also additionally similarly put off its eruption [2].

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CONCLUSION

Although Mesiodens may cause malpositioning of the permanent teeth, aesthetic concern and speech disturbances for the patient. Thus, early diagnosis and prompt extraction of the mesiodens is important to prevent further malalignment and enable early orthodontic intervention of the developing malocclusion.

CONFLICT OF INTEREST

Nil.

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